

Appl. No. : 10/820,415
Filed : April 8, 2004

AMENDMENTS TO THE CLAIMS

1. (Original) An antifuse device for an integrated circuit formed on a substrate, the antifuse device comprising:

- a first layer of magnetic material formed on an exposed surface of the substrate;
- a second layer of magnetic material positioned above the first layer;
- a dielectric layer interposed between the first layer and the second layer wherein the first layer, the second layer and the dielectric layer form an MTJ junction; and
- a logic circuit that is selectable so as to interconnect the first layer to a first electrical potential such that the first and second layers of magnetic material are shorted together when the logic circuit is selected.

2. (Original) The device of Claim 1, wherein the first layer comprises a pinned layer of magnetic material that is magnetized in a first fixed direction, the second layer comprises a soft layer of material that can be magnetized in either the first fixed direction or a second direction, and the dielectric layer comprises a tunnel dielectric layer interposed between the first layer and the second layer.

3. (Original) The device of Claim 2, wherein the first layer comprises a layer of NiFe that is approximately 100 -500Å thick, the second layer comprises a layer of NiFe that is approximately 40 - 50 Å thick, and the dielectric layer comprises a layer of Al₂O₃ that is approximately 10 – 15 Å thick.

4. (Original) The device of Claim 2, wherein the antifuse device has a resistance of greater than approximately 1 MegaOhm prior to the interconnection to the first electrical potential and wherein the antifuse device, upon interconnection to the first electrical potential is shorted across the tunnel dielectric layer.

5. (Original) The device of Claim 4, wherein the selected voltage is approximately 1.8 volts.

6. (Original) The device of Claim 1, wherein the antifuse MTJ device further comprises a first barrier layer, a pinning layer, and a second barrier layer.

7. (Original) The device of Claim 6, wherein the first barrier layer comprises a layer of Ta that is approximately 50 Å thick, the pinning layer comprises IrMn that is approximately 100 Å thick, and the second barrier layer comprises Ta that is approximately 200 Å thick.

8. – 16. (Cancelled).